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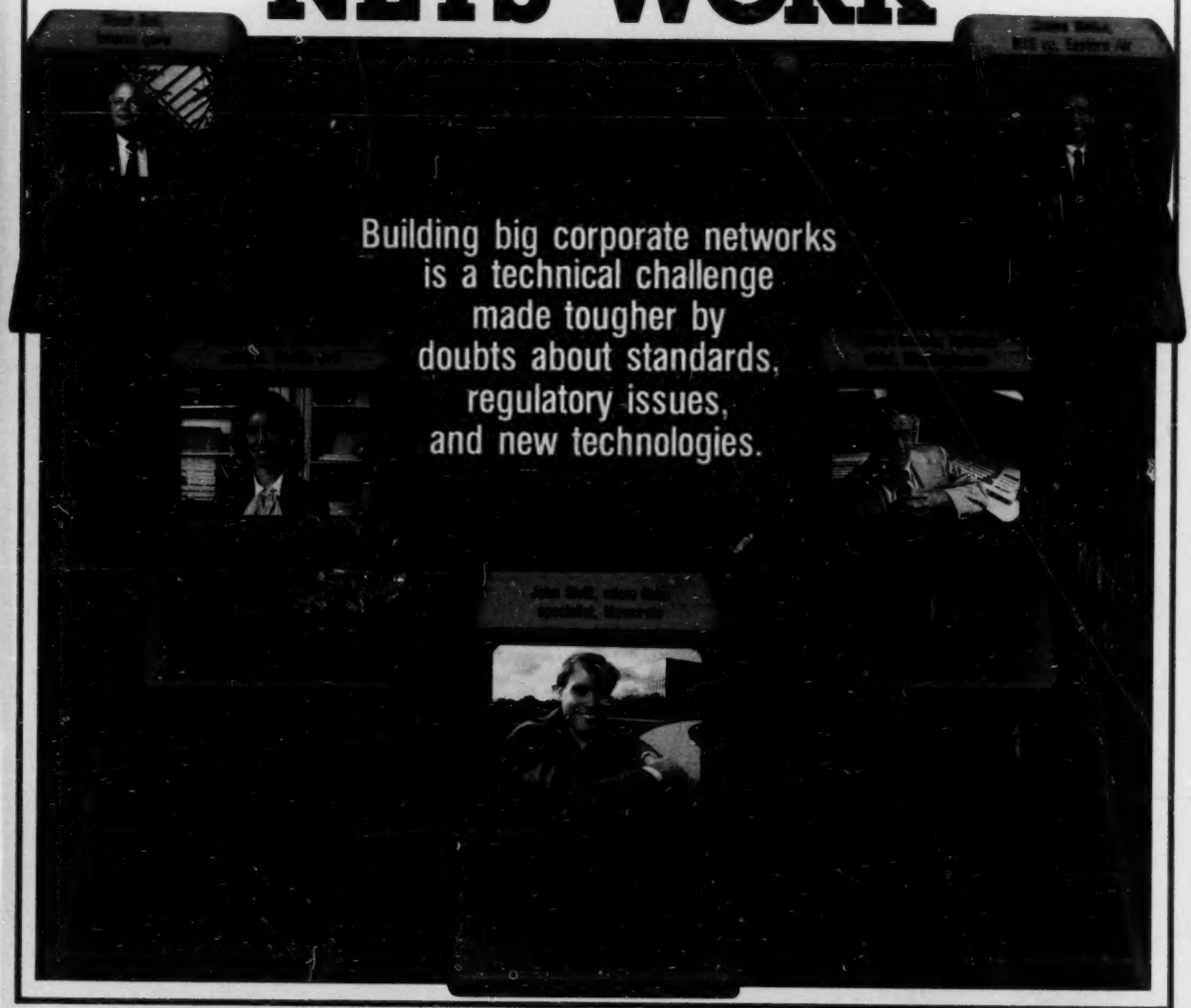
SPECIAL ISSUE

COMPUTER DECISIONS®
THE MAGAZINE FOR MIS EXECUTIVES
A HAYDEN PUBLICATION

MIS: MAKE NETS WORK



Building big corporate networks is a technical challenge made tougher by doubts about standards, regulatory issues, and new technologies.

October 28, 1986

COMPUTER DECISIONS

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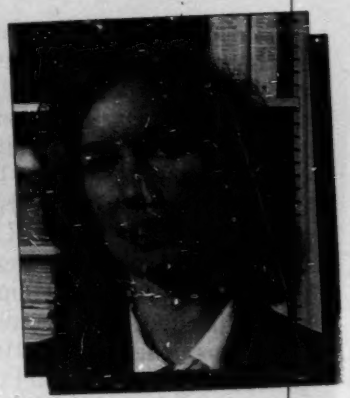

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Cover photo: Freeze Frame

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COMMUNICATIONS COSTS RISE WITH NO RELIEF IN SIGHT

At first glance, the laws of supply and demand would seem to have gone awry in corporate communications. Despite a big increase in the number of long-distance carriers and communications equipment suppliers, budgets keep rising.

Usually, greater supply increases competition, thereby reducing costs. However, a survey by the Dallas-based International Communications Associates of its 600 members reveals that corporate spending on communications is rising. Corporations in nine of the 17 industry classifications reported higher expenditures, as a percentage of revenues and operating expenses, last year than in 1984. The ICA's membership is a good bellwether for corporate trends: Its members must be users, not providers, of communications products and services, and must have annual phone bills of at least $1 million.

Analysts and consultants believe communications spending is rising for four reasons:

- Access charges have been imposed on all phone customers.
- The cost of local channels is rising.
- The cost of private lines, including installation, has risen, hiking the cost of private networks.
- The falling prices of communications gear like multiplexers, PBXs, and modems have been more than offset by heavy corporate spending in networking and communications.

The top spenders in terms of operating expenses all have seen dramatic growth in their communications budgets. Retailers, for example, saw communications expenses as a percentage of operating costs accelerate by 480 percent from 1984 to 1986. Banks, nonprofit institutions, and service industries also saw high-flying growth. Each of these industries typically uses communications links to tie together decentralized operations.

Are such cost increases inevitable? No, say several consultants. "For MIS executives, the news on overall costs since the AT&T divestiture has been bad, and it's likely to get worse," says Robert Ellis, president of the Aries Group, a Rockville,

CORPORATE PHONE BILL—VIEW #1

Communications spending as % of total revenues

Rank 1985	Rank 1984	Industry	1985 % Revenues	1984 % Revenues
1	3	Office equipment/Computers	1.35	2.19
2	*	Transportation/Trucking	1.10	*
3	2	Financial services	1.00	2.34
4	*	Instruments	0.93	*
5	5	Electrical/Electronics	0.92	1.26
6	14	General services	0.91	0.63
7	17	Retailing (nonfood)	0.87	0.49
8	8	Publishing/Broadcasting	0.70	0.98
9	12	Manufacturing	0.67	0.77
10	*	Oil service & supply	0.64	*
11	16	Chemicals	0.60	0.51
12	15	Tire & rubber	0.59	0.55
13	22	Drugs	0.58	0.30
14	19	Special machinery	0.49	0.41
15	13	Aerospace	0.42	0.76
16	*	Metals & mining	0.34	*
17	*	Paper & forest products	0.33	*
18	*	Steel	0.30	*
19	20	Food processing	0.29	0.40
20	24	Automotive	0.21	0.21
21	*	Natural resources	0.20	*
21	21	Utilities	0.20	0.31
23	21	Beverages	0.13	0.31

** No data in survey due to changes in industry classification.*
Total revenues reported: $494,686,580,000. Total communications spending: $2,669,220,000.
Data based on responses from 138 ICA member companies.
Source: International Communications Assoc.

CORPORATE PHONE BILL—VIEW #2

Communications spending as % of operating costs

Rank 1985	Rank 1984	Industry	1985 % Expense	1984 % Expense
1	18	Retailing (nonfood)	3.02	0.52
2	7	Banks	2.33	1.29
3	3	Office equipment/Computers	1.55	2.53
4	2	Financial services	1.38	2.66
5	12	Universities/Nonprofits	1.30	0.93
6	*	Instruments	1.22	*
7	*	Transportation/Trucking	1.16	*
8	6	Electrical/Electronics	1.11	1.41
9	15	General services	1.05	0.68
10	13	Manufacturing	0.81	0.85
11	9	Publishing/Broadcasting	0.80	1.19
12	*	Oil service & supply	0.73	*
13	24	Drugs	0.68	0.36
14	21	Chemicals	0.62	0.43
15	16	Tire & rubber	0.59	0.57
16	23	Special machinery	0.54	0.40
17	14	Aerospace	0.45	0.80
18	*	Paper & forest products	0.45	*
19	22	Food processing	0.43	0.32
20	*	Metals & mining	0.34	*
21	*	Steel	0.29	*
22	*	Automotive	0.23	*
23	24	Utilities	0.22	0.36
24	*	Natural resources	0.21	*
25	25	Beverages	0.15	0.35

** No data in survey due to changes in industry classifications.*
Total communications spending reported: $3,313,618,000. Total operating expenses reported: $472,522,901,000.
Data based on responses from 140 ICA member companies.
Source: International Communications Assoc.

> "It doesn't matter which carrier you choose if your rate per unit is made higher by splitting your load between three carriers."

MD, rate and tariff consultancy. "Their costs are rising because they're stuck on private lines. The cost of the typical multidrop data circuit used in corporate networks has gone up."

These cost increases are evident in the bread-and-butter of corporate networks: multidrop private lines connecting sites in the same region. For example, the cost of a circuit connecting a data center in Philadelphia with three terminals in Rockville, MD, and five in nearby Gaithersburg, MD, has risen by 40 percent since divestiture, to about $1,300 per month.

By contrast, WATS, direct-dial, and long-haul private lines have fallen in cost. The reason: competition. "Any vendor that can rent a WATS line and a circuit switch is trying to become a reseller of direct-dial services," says Ellis. "Satellite carriers offer competition in long-haul private lines, but in multidrop lines, AT&T is still the only provider."

There are alternatives in data transport, which typically accounts for 30 percent of communications implementation and operating costs, says Joaquin Gonzalez, networking strategies analyst at the Gartner Group consultancy, Stamford, CT. However, reliance on private lines remains high, keeping costs high.

Carriers, notes Gonzalez, have a strategic interest in maintaining high private-line rates. "The golden rule for carriers is that private lines for data are inflexible," he says. "Businesses are locked into data communication architectures that require private lines."

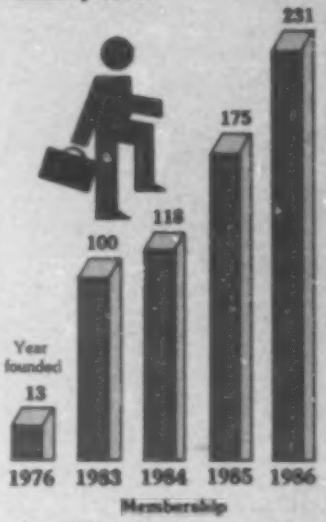
Robert Ellis cautions that a wider choice of alternatives is not necessarily better if it leads to confusion. "In voice communications, managers are confronted by many strange choices, but the key to business is preserving economies of scale in dealing with a carrier," says Ellis. "It doesn't matter which carrier you choose if your rate per unit is made higher by splitting your load between three carriers. You might be better off giving it all to one carrier."

Gonzalez, however, says confusion is inevitable. MIS and communications executives have more experience in evaluating and selecting equipment like muxes and modems, and network software like protocols, than in selecting transmission services. There's a lot of on-the-job learning going on, he says. "How would you have gained any schooling in the options if you never had to worry about transmission alternatives?" he asks.

The way out for MIS executives is moving data transport off private lines, says Gonzalez, either by bypassing local exchange carriers or by redesigning their networks. The most commonly used alternatives, he says, are very small aperture satellites, microwaves, and public data networks. These alternatives can be difficult to implement, and some are expensive. Gonzalez, however, believes they are worthy of consideration. "If MIS executives don't, they'll continue to get raked on private lines," he says. —*Brian Shannon*

AMPLE ADVICE

Growth at key telecomm consultants group mirrors an industry boom.



Source: The Society of Telecommunications Consultants, NY. Membership information for the years 1977 through 1982 is not available.

Charts by Denise Barbieri

CONSULTANTS ADVISE AND CONSULT

You've probably had to chase them away from your door. Membership in the Society of Telecommunications Consultants indicates that this is one hot career.

The society doesn't claim to represent every consultant advising corporations on networks and communications. But its membership roles are a fair barometer of the number of consultants vying for your business. The society began with 13 members. It now has about 231, and projects the total number of consultants at 1,400.

Gordon Gordetsky, vice president of the society's public relations committee, estimates that 20 percent more consultants enter the business every year. Why? Opportunity is calling. The industry itself has expanded during this decade. Private corporate networks have grown dramatically during the same period, says Gordetsky. Also, many of the telecommunications systems installed during the 1970s have been replaced during the last few years. It all adds up to a tremendous demand for consulting services.

Surprisingly, Gordetsky does not believe the Bell System breakup had a particularly significant effect on the demand for consultant services. The society had a brief burst of new members between mid-1984 and mid-1985, he says, but high growth rates had already been established.

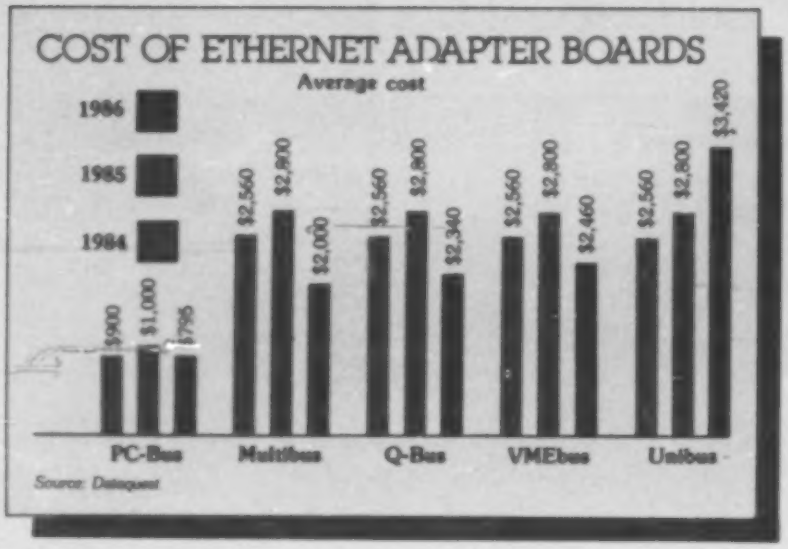
The society's 231 members are full-time consultants, and they work for 150 firms employing a total of about 650 consultants, says Gordetsky. To become a member, applicants must have a year of experi-

(Continued on page 14)

ROILED MARKETS

No. of long-distance carriers % Change			No. of communications vendors	% Change
85-86: +19.3%	260	'86	3,300	85-86: +2.9%
84-85: +19.8%	218	'85	3,206	84-85: +7.0%
84-86: +42.9%	182	'84	2,996	84-86: +10.1%

Source: Datequest.



high of 21.9 percent for Multibus boards to a low of 3.9 percent for VMEbus boards since 1984. However, Unibus board costs have risen dramatically during the same period—by 33.6 percent. Unibus is at the heart of DEC's VAX line, which has been ringing up big sales this and last year. Brad Baldwin, a Dataquest analyst, says prices for other Ethernet adapter boards could rise if the demand for their buses changes.

Baldwin expects prices to decline across the board during the next several years—possibly by as much as $500. The reason will be cheaper components. After that, Baldwin expects prices to rise. "Prices will bottom out, possibly in two years, and then start moving up again," he says.

—*Brian Shannon*

LOCAL-AREA NETWORKS

LANS: GROWING, GROWING, AND GONE

The number of local-area networks in corporations is growing rapidly. Evidence of the trend is the 200 percent increase in the number of LAN connections since 1984.

The increase, reported by Dataquest, a San Jose, CA, market research firm, covers all LANs, not just those that link microcomputers. Dataquest also reports that shipments of LANs, as measured by connections, are up by 120 percent since 1984.

LANs are catching on for two reasons, say analysts: More corporations are setting up links between mainframe databases and users at smaller computers, and networks allow users to share expensive peripherals. The most important need LANs serve, says Eric Arnum, analyst at International Resource Development Inc., Norwalk, CT, is document transfer. LANs are starting to replace the traditional "sneakernet"—users running back and forth between workstations with floppy disks, he says.

> LANs offer an efficient means to connect micro users to mainframes.

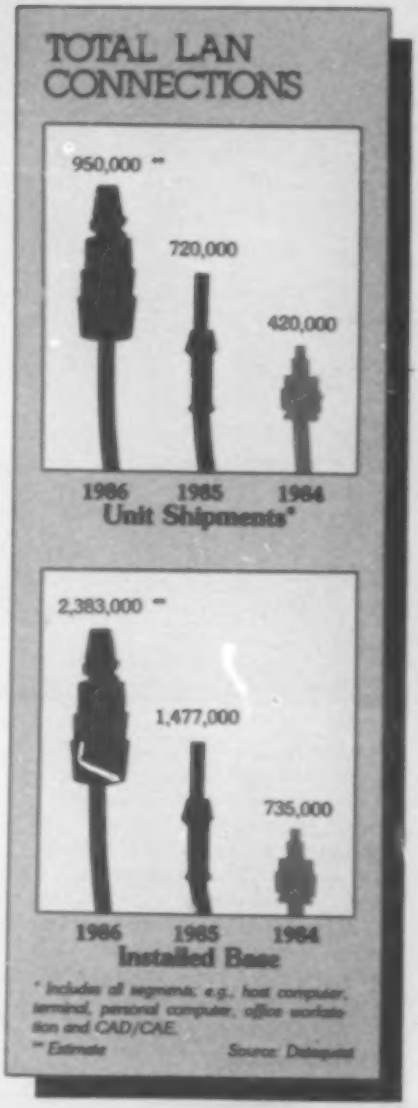
Corporations are also striving to get the most efficient use possible from their peripherals, says Arnum. Rather than allow users to equip themselves with laser printers, for example, corporations are providing the means for groups of users to share printers.

Brad Baldwin, an analyst at Dataquest, says the increasing number of LANs in corporations reflects a growing concern that users have the access they need to larger systems. "Sure, all the standard efficiency issues apply to LANs," he says. "But printers, hard disks, and other peripherals are becoming generally less expensive." The more important issue, he says, is that LANs offer an efficient means to connect micro users to mainframes. All the major hardware vendors offer gateway products providing such access, he says.

LAN installations in corporations would probably proceed apace; except for the problem of "wall-bashing," says Arnum. An LAN that costs from $695 to $1,000 per connection might easily demand an equal amount in construction work for rewiring, he says.

The growth in PBX installations has been much slower than the growth of LANs, according to Northern Business Information, New York. Users have been spending about 3 percent more each year on PBXs, a paltry growth rate.

Arnum says PBX installations have slowed for three reasons. First, LANs are preferred for many connectivity functions that might once have been dedicated to



PBXs. LANs are much faster than PBXs for data transfer. Second, only two years ago, LANs were in their infancy. Corporations are now buying LANs at a booming rate. Third, the boom for PBXs has already passed.

Although PBX line shipments have not been expanding rapidly, a significant shift toward digital PBXs is evident. According to Northern Business Information, 29 percent of the PBX lines shipped in 1984 were analog.

Some analysts interpret these statistics to mean that the volume of data communications in corporations is growing. Others are skeptical. Joaquin Gonzalez, networking analyst at the Gartner Group, Stamford, CT, believes many corporations have purchased digital PBXs only to continue to use them mostly for voice communications. Only 5 percent to 10 percent of the PBX lines in major corporations are transporting data, he says. —*Brian Shannon*

STANDARD LINKS

RIDING THE TELE-COASTER

When can MIS and communications executives expect to see the AT&T divestiture's promised lower business phone costs? The cost of Direct Distance Dialing and WATS have fallen as competition increased and some of the old cross-service subsidies of the Bell System have been eliminated. Yet most corporate budgets are rising.

The situation is described as a rollercoaster by Ralph Putman, tariff specialist for Telco Research Corp., Nashville, TN, market researchers. Some prices go up, others go down, and the result is unsettling.

A key factor in the pricing trends is access line and subscriber line charges. For example, the cost of a four-minute call during business hours from New York to Los Angeles has dropped 26.2 percent for AT&T customers since 1983. MCI's customers have enjoyed an 11.6 percent rate reduction for the same call during the same period. These savings, however, are offset by subscriber line charges, says Robert Ellis, president of the Aries Group, a Rockville, MD, consultancy.

The subscriber line charges set by the Federal Communications Commission require businesses to pay $3 per line per month for Centrex connections and $2.50 to $6 per line per month for PBX lines. At the same time, charges for access lines—the lines connecting the phone company's local switch to customers' buildings—have risen from $36.50 to $50.50 since January 1984, a 38.4 percent increase.

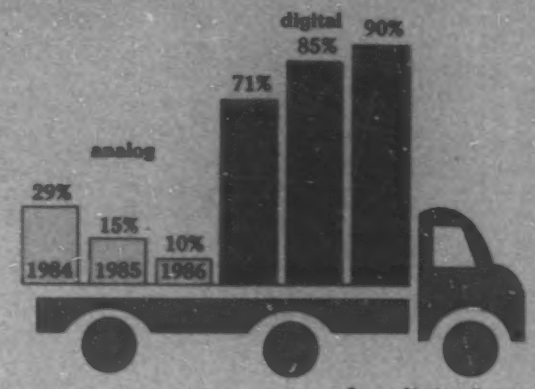
Ellis expects the Federal Communications Commission to change its access charge scheme by shifting the balance between charges paid by consumers and businesses more in favor of businesses. (See "A muddled tele-future," page 28.) The result, he says, will be rate reductions

(Continued on page 20)

← CIRCLE 10

PBX LINE SHIPMENT

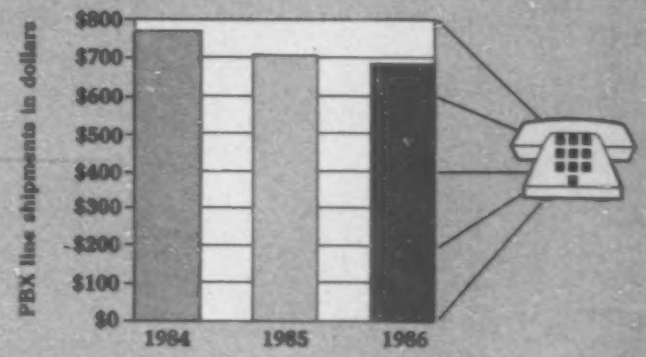
Digital vs. analog



Source: Northern Business Information

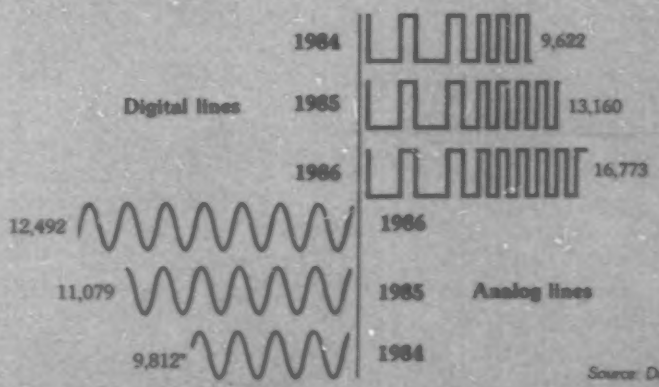
PBX RETAIL PRICE PER LINE

U.S. market, 1984-86



Source: Northern Business Information

DIGITAL PBXs RISE



Source: Datapro
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(Continued from page 20)

MANAGEMENT PROFILE

MANAGERS' STATS

The two charts on this page cover four key areas concerning communications managers: which departments they report to; their job responsibilities; their education; and their work experience.

The left half of the top chart confirms that MIS/dp and communications departments are forging closer ties, and that the communications function is rising in visibility and importance in most organizations. The right half shows that telecomm managers still devote most of their time to managing voice communications.

The first pie in the bottom chart shows, in part, that 97 percent of the survey participants have some college education and 35 percent have post-graduate degrees. The second pie outlines various educational specialties, with business as the largest component. The third pie indicates that most managers rose through the ranks in their organizations. —*Brian Shannon*